NEW SOUTH WALES
DEPARTMENT OF AGRICULTURE

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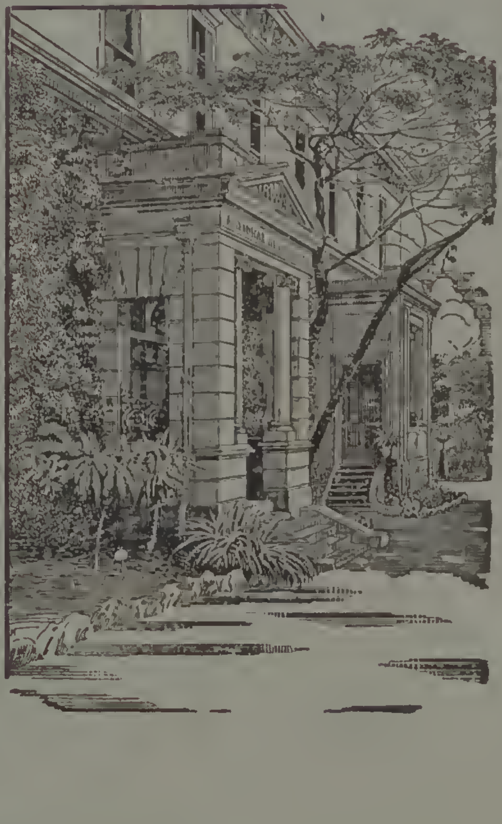

Flora Series: Nos. 21-22 **1962**

G49649

CONSPECTUS OF FAMILIES OF VASCULAR PLANTS REPRESENTED IN THE FLORA OF NEW SOUTH WALES

(The account of each family, or consecutive group of families as issued, will appear with separate pagination; the names of those families that have been published to date are in italics.)

GYMNOSPERMAE

1 *Zamiaceae*
2 *Podocarpaceae*
3 *Araucariaceae*
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ANGIOSPERMAE—MONOCOTYLEDONES

6 *Typhaceae*
7 *Sparganiaceae*
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10 *Ruppiaceae*
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38 Haemodoraceae
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41 Alstroemeriaceae
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43 Petermanniaceae
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48 *Orchidaceae. See H.M.R. Rupp: The Orchids of New South Wales.* 1943.

ANGIOSPERMAE—DICOTYLEDONES

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61 Aristolochiaceae
62 Polygonaceae
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66 Nyctaginaceae
67 Phytolaccaceae
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81 Annonaceae
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85 Lauraceae
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90 Capparidaceae
91 Resedaceae
92 Droseraceae

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FLORA OF NEW SOUTH WALES

by

VARIOUS BOTANISTS

Produced under the Direction of

R. H. ANDERSON

Director and Chief Botanist,

National Herbarium of New South Wales

No. 21 PALMAE

No. 22 ARACEAE

G49659—2

21. PALMAE

(By O. D. Evans and L. A. S. Johnson)

Flowers unisexual or, more rarely, hermaphrodite, actinomorphic, usually numerous, mostly small. Inflorescence (spadix) a panicle, sometimes reduced and spike-like, arising from amongst the crown of leaves or from below it, enclosed at first in 1 or more large bracts (spathes). Perianth in 2 whorls. Sepals 3, separate and imbricate, or united in a 3-lobed or 3-toothed cup. Petals 3, separate or connate, usually longer than the sepals, valvate in the males and usually imbricate in the females. Stamens variable in number, usually 6, but sometimes more numerous, rarely fewer; anthers 2-locular. Ovary superior, either 3-locular or consisting of 3 distinct carpels, rudimentary or absent in male flowers; ovule usually solitary, erect to pendulous. Fruit a berry or drupe, 1- to 3-locular, or the carpels distinct. Seed free or adherent to the endocarp; endosperm present, sometimes ruminate; embryo small.

Woody plants, the stem usually unbranched, often erect with a terminal crown of large leaves, sometimes thin, weak, climbing, and bearing alternate leaves, or rarely quite short, either covered with the persistent bases of the leaves or marked with annular scars. Leaves with a plicate lamina, usually becoming pinnately or palmately split into segments or long lobes, rarely simple and entire; petiole long or short, the base usually sheathing.

A large family of more than 200 genera, widely distributed in the Tropics, a few in warm-temperate regions. About 15 genera in Australia, 4 extending into New South Wales. The family is of considerable importance, many species providing useful products; *Cocos nucifera* L., " Coconut ", is the source of copra and fibre, but is not hardy in New South Wales; *Phoenix dactylifera* L., which produces the dates of commerce, is occasionally seen here; *Elaeis guineensis* Jacq. is the " Oil Palm " of West Africa. Many palms are valued for ornamental purposes and, amongst these, the following are some of the species seen in New South Wales gardens: *Phoenix canariensis* Chabaud (Canary Is.) and *P. reclinata* Jacq. (Africa); *Washingtonia filifera* (Linden ex André) H. Wendl. ex S. Wats. (California), and *W. robusta* H. Wendl. (Lower California, Mexico); *Trachycarpus fortunei* (Hook.) H. Wendl. (E. Asia); *Butia capitata* (Mart.) Becc. (Brazil); *Arecastrum romanzoffianum* (Cham.) Becc. (Brazil); *Livistona chinensis* (Jacq.) R.Br. (China); *Howea forsterana* (C. Moore et F. Muell.) Becc., and *H. belmoreana* (C. Moore et F. Muell.) Becc. (both Lord Howe Is.); and in addition several native species dealt with below. The Cycads superficially resemble palms but are quite unrelated to them, differing fundamentally in structure; see Zamiaceae.

The leaves of palms in the seedling stage differ very considerably from those of the adult and are usually either undivided or 2-lobed. The peculiar structure and development of the palm leaf is discussed by Eames in Phytomorphology III (1953) 172-189.

1. Erect palms, unarmed except occasionally the petioles; fruit smooth.
2. Leaves palmately divided, fan-shaped; flowers hermaphrodite .... *Livistona* 1.
2.* Leaves pinnately divided; flowers unisexual.
3. Leaves 3-4 m. long; spadix much divided, shorter than the leaves. Trunk 20 cm. or more in diameter .... *Archontophoenix* 3.
3.* Leaves less than 2 m. long; spadix undivided, longer than the leaves. Stems slender, cane-like .... *Linospadix* 4.
1.* Climbing palms, armed with prickles; flowers unisexual; fruit scaly .... *Calamus* 2.

1. LIVISTONA R.Br.

Low or tall, erect palms. Leaves fan-shaped, plicate; segments entire or bifid at the apex. Petioles long, more or less armed on the margins, rarely nearly smooth. Inflorescence arising from amongst the leaves. Spadix usually large, much divided. Spathes several, tubular, coriaceous, persistent. Flowers hermaphrodite, very small, sessile or shortly pedicellate, solitary or clustered along the ultimate branches of the spadix. Calyx trifid. Corolla longer than the calyx; petals 3, valvate. Stamens 6, distinct but contiguous, dilated at the base; anthers small. Ovary 3-lobed, the carpels readily separable; style shortly columnar; ovules solitary, erect. Fruit globular or ovoid, reduced by abortion to a single carpel; pericarp not thick, hard when dry; endosperm horny, not ruminate, with a deep broad cavity on one side, filled with brown spongy tissue; embryo sub-basal.

About 25 species, from China and India through Malaysia to Australia, one only extending into New South Wales.

L. australis (*R.Br.*) *Mart.*, Hist. Nat. Palm. III (1839) 241; H. Wendl. & Drude in Linnaea XXXIX (1875) 232; Hook. f. in Bot. Mag. CIII (1877) sub. t. 6274; Benth., Fl. Austr. VII (1878) 146; Moore & Betche, Handb. Fl. N.S.W. (1893) 427; F. M. Bailey, Qld. Flora V (1902) 1684; Domin in Bibl. Bot. XX, Heft 85[1] (1915) 501; Maiden & Betche, Census (1916) 35; Maiden, Forest Flora VII (1920) 353 t. 256 (excl. figs. A-F). Tall palm, sometimes attaining a height of 30 m. Trunk single, erect, 30-50 cm. diam. at 2 m. from ground, rather rough, brown, marked with annular scars and with numerous narrow, V-shaped vertical furrows and wider ridges. Leaves in a dense crown; petiole 150-250 cm. long, armed on the margins, towards the base, with short, stout, recurved spines; lamina suborbicular in outline, 150-200 cm. diam., divided to the middle or lower into ca. 70 narrow, plicate segments, the latter entire or split in two at the apex. Spadix ca. 1 m. long, decurved, much branched. Flowers light yellow, ca. 3 mm. diam., subsessile, subtended by a small bract. Spathes densely hairy. Calyx segments thin, acute, ca. 2 mm. long. Petals 3, triangular-ovate, fleshy, valvate, subacute, ca. 3 mm. long. Fruit spherical, 1·5-1·8 cm. diam., 1-seeded, smooth, red changing to black, slightly glaucous; pericarp fleshy, ca. 2 mm. thick when fresh, hard and brittle when dry; testa pale brown, smooth; embryo dorsal, above the base of the seed. The fruit appears to be borne on a pedicel 1-4 mm. long, but this structure is compound, consisting of 2-3 parts. viz. the hardened base of the persistent perianth, the true pedicel (ca. 1 mm.) and often the ultimate division of the spadix upon which the flower was seated. "Cabbage Palm", "Cabbage Tree". *Corypha australis* R.Br., Prodr. (1810) 267.

Coast from North to South. In wet sclerophyll forest and, in sheltered places, around swamp forest and (in the south) in or near areas of rainforest. Palm Beach, Ford 10.1947 (47162); Botany Bay, Banks & Solander 1770 (47074); Kurnell, Boorman 5.1906 (47079); Bola Creek, National Park, Johnson 1947 (47076); Bola Creek, National Park, Ford 2.1949 (47075); Illawarra, Weber 7.1886 (47077); Bega, per Glenfield Veterinary Research Station 7.1954 (47073). Also present at Cape Byron; between Woodburn and Ballina; Boambee, south of Coff's Harbour; Smoky Cape, Macleay R.; Tacking Point near Port Macquarie; Coolongolook to Taree; Smith's Lake, south of Forster; many places from Port Stephens to Broken Bay South; Grose Vale; Fox Valley, Wahroonga; sheltered places on shores of Port Jackson and Port Hacking; Ocean View near Robertson; Kangaroo Valley; Milton; Pebbly Beach, N of Bateman's Bay; Tilba Tilba; near Eden. Probably in other localities, though rather uncommon on the North Coast. Also in south-eastern Queensland and far eastern Victoria.

L. drudei F. Muell. ex Becc. (in Webbia V (1921) 19, and in Ann. Roy. Bot. Gard. Calcutta XIII (1931) 89), from North Queensland, was considered by Drude (in Engl. Bot. Jahrb. XVI, Beibl. 39 (1893) 11-12) possibly to be conspecific with *L. australis*. Beccari has shown however that it is distinct. The first valid publication of the name is by Beccari (1921), though it was previously published invalidly by F. Mueller (Fragm. XI (1878) 55, name in index only, p. 147) and by Drude (l.c.).

The wood of the outer part of the stem is moderately hard. It has occasionally been used for slabs for building and for walking sticks. The immature leaves in the heart of the crown have been used, when boiled, as an article of food, hence the name Cabbage Palm. Fibres obtained from young leaves were at one time used for weaving into hats which were known as "Cabbage tree" hats. *Livistona australis* is planted in gardens for ornamental purposes. Seedlings of *Livistona* can be distinguished from those of *Archontophoenix* by the absence of a deep terminal notch in the leaf.

2. CALAMUS L.

Dioecious or polygamo-dioecious, prickly palms. Stems mostly weak and climbing, sometimes very long, more rarely short and erect. Leaves pinnately divided; rhachis and sheaths usually armed with straight or hooked prickles, and in some species, not Australian, the rhachis ending in an armed whip-like cirrus. Inflorescence arising from within the leaf-sheath, away from the base of the petiole. Spadix paniculate, ultimate branches usually arranged in partial panicles along the prickly, whip-like main axis, the latter often continued, or the spadix sometimes sterile and consisting only of the long, slender, armed flagellum. Spadices either male or seed-bearing, the latter producing female flowers, each usually accompanied by a male flower, which is often sterile or falls off before maturity. Spathes tubular, at least at the base, persistent. Flowers small, sessile on the ultimate branches of the spadix, arising each in the axil of a small spathe (spathel), within which is a cup-shaped pedicel ("involucre"), on which the flower is seated. Below each female flower a cup-shaped involucrophore is interposed between spathel and involucre. Male flower: calyx tubular and slightly 3-lobed; corolla much longer, divided into three nearly to the base; stamens 6, arranged in 2 series around an abortive ovary. Female flower: calyx cupular or sub-campanulate, more or less deeply 3-toothed; corolla more deeply divided, segments 3, narrower than those of the calyx; ovary 3-locular, covered with imbricate scales; style divided into 3 stigmas. Fruit globular, closely covered with reflexed, imbricate, shining scales, usually 1-seeded.

A large genus of more than 300 species, widely distributed in tropical and subtropical regions of the Old World. Only about 3 species occur in Australia, one of which extends into northern New South Wales. The genus exhibits a number of morphological peculiarities and specializations which are discussed by Furtado in Gard. Bull. Singapore XV (1956) 32-258. It is of some economic importance, various species yielding most of the Rattan and Malacca cane of commerce.

C. muelleri *H. Wendl.* in H. Wendl. & Drude in Linnaea XXXIX (1875) 193; Benth., Fl. Austr. VII (1878) 135; Moore & Betche, Handb. Fl. N.S.W. (1893) 426; F. M. Bail., Qld. Flora V (1902) 1686; Maiden & Betche, Census (1916) 35. Stems weak, climbing, up to 20 m. or more in length, ca. 7 mm. diam., covered with closely appressed, persistent, armed leaf-sheaths. Leaves non-cirriferous, 30-50 cm. long or more, paripinnately divided into 10-16 segments, orbicular to elliptical in outline, sessile or nearly so; segments 10-25 cm. long, 1·5-2·5 cm. broad, acute, sometimes acuminate, margins and occasionally undersurface bearing short fine prickles evenly spaced; rhachis armed on lower side with solitary recurved prickles. Leaf-sheaths ochreate, densely armed, the prickles thin, brownish, 3-10 mm. long, unequal, horizontal or slightly deflexed. Ochrea ca. 1 cm. long, also densely armed with thin prickles up to 20 mm. long. Internodes ca. 12 cm. long. Spadix 1 m. long or more, bearing on the distal part 2 or 3 simple panicles, each 5-8 cm. long with 3-10 lateral branches, usually unarmed; terminal flagellum short or undeveloped; peduncle, rhachis and terminal flagellum (when present) armed with short recurved prickles. Sterile spadices flagellate, variable in length, similarly armed. Male flower: calyx campanulate, trifid, ca. 2 mm. long; corolla 4-5 mm. long, the petals lanceolate, striate. Female flower: calyx trifid, 1-2 mm. long; corolla ca. 3 mm. long. Fruit globular, ca. 12 mm. long, yellowish. " Lawyer Palm ". *C. muelleri* var. *macrospermus* H. Wendl. et Drude in Linnaea XXXIX (1875) 194.

North Coast, in rainforest. Mt. Warning, Rodway 10.1939 (50763); Whian Whian State Forest, north of Lismore, Constable 1.1953 (22407); Ballina, Maiden & Boorman, 12.1903 (47092); Bruxner Park, ca. 5 miles NW of Coff's Harbour, Johnson 10.1959 (48684). Also present at least as far south as the Dorrigo and Bellinger River district. Also in Queensland.

This extremely prickly climbing palm may form tangled masses in rainforest, and its stems, leaves and inflorescences impede progress in such places.

3. ARCHONTOPHOENIX H. Wendl. et Drude

Tall monoecious palms with a single trunk marked or stepped with annular scars, otherwise smooth. Leaves large, pinnately divided, with long sheathing bases to the petioles; segments numerous, entire, tapering gradually to an acute apex. Inflorescence expanding after the fall of its subtending leaf and thus appearing at the base of the crown. Spadix compound, much branched from the apex of a short peduncle. Spathe 2-valved, the valves of equal length, caducous. Flowers purplish or white, typically in threes, the middle one female. Male flowers 3-angled and oblique in bud; calyx 3-lobed; petals 3, valvate, much longer than the calyx; stamens 9-18, exserted; anthers versatile or dorsifixed; rudiment of the ovary stout or slender. Female flowers more or less rounded, seated in a cupule of bracts; calyx and corolla imbricate and of similar length; ovary 1-locular, with 3 stigmas. Fruit 1-seeded, subglobose or ellipsoid, 1·5 cm. or less in length, coral pink or red at maturity; pericarp thin and fleshy. Seed not furrowed, raphe consisting of bands of loose or embedded fibres encircling the seed; endosperm deeply ruminate.

A small genus of about 3 species confined to tropical and subtropical eastern Australia, one only extending into New South Wales.

A. cunninghamiana (*H. Wendl.*) *H. Wendl. et Drude* in Linnaea XXXIX (1875) 214; F. M. Bail., Qld. Flora V (1902) 1675 (as " *cunninghamii* "); Domin in Bibl. Bot. XX, Heft 85[1] (1915) 498; Maiden & Betche, Census (1916) 35; Maiden, Forest Flora VII (1920) 193, t. 244; L. H. Bail. in Gent. Herb. III (1935) 407, ff. 227, 228 p.p., 229 p.p., 230, 231, 234b, 235 p.p., 238 p.p. Tall graceful palm, up to ca. 20 m. Trunk ca. 25 cm. diam. at 2 m. from the ground, only slightly enlarged, if at all, towards the base. Leaves 3-4 m. long including the petiole (20-25 cm.), with a sheathing base 70-90 cm. long; segments 80-90 pairs, 60-90 cm. long, the largest 5-8 cm. broad, green on both surfaces; mid-vein prominent above and below, the secondary veins not very prominent, veins near the margin very fine; underside of the mid-vein with scattered, long, narrow, blackish or brownish scales. Spadix 100-150 cm. long, divided into numerous pendent spikes 50-80 cm. long. Flowers purplish throughout except the pollen, sessile, usually 3 together, the laterals male, the central female, but the latter aborted towards the tips of the spikes. Male flowers: sepals deeply cordate, ca. 2 mm. long, 2-3 mm. broad; petals 5-6 mm. long, 3-4 mm. broad, turgid, obliquely acuminate, stamens ca. 15, united at the base to a thick disc; filaments 3-5 mm. long, thick, flexuose in upper portion; anthers 2·5-3 mm. long; rudimentary ovary 2-3 mm. long, ca. 1 mm. thick near base, conical, with 2 or 3 divergent rudimentary styles and stigmas. Female flowers maturing after the fall of the males, the stigmas but not the perianth expanding at anthesis; stigma trifid, the lobes divergent. Fruit red, subglobose, 1·3-1·5 cm. diam.; pericarp fleshy, thin, supported by numerous broad bands of hard tissue (raphe) separable with difficulty from the seed. Seed ca. 1·0 cm. diam. Flowers autumn. " Bangalow Palm ", " Piccabeen Palm ". *Ptychosperma cunninghamiana* H. Wendl. in Bot. Zeit. XVI (1858) 346; Benth., Fl. Austr. VII (1878) 141 (as " *cunninghamii* "); Moore & Betche, Handb. Fl. N.S.W. (1893) 427, (as " *cunninghamii* "); *Jessenia amazonum* Drude in Mart., Fl. Brasil. III (1882) 474, t. 109; *Loroma amethystina* O. F. Cook in Journ. Wash. Acad. Sci. V (1915) 118; *L. cunninghamiana* (H. Wendl.) O. F. Cook, l.c. (in note).

North and Central Coast and also South Coast north of Bateman's Bay, in or near rainforest especially in valleys and moist places. Orara State Forest, Constable 5.1956 (47114); Cedar Brush Creek, 18 miles S of Nowra, Floyd 8.1952 (47070); southern headwaters of Mathie's Creek, 4 miles W of Wandandian, Johnson & Constable 2.1960 (49572, 49791); Pebbley Beach, between Kioloa and Durras Water, N of Bateman's Bay, Constable 6.1960 (53968). Also widely distributed in rainforest areas of the North Coast and ranges (up to 3,000 feet on the Gibraltar Range W of Jackadgery), and present in the Wyong and Gosford districts, at Port Hacking R., Royal National Park, occasionally on slopes of the Illawarra escarpment as far south as Cambewarra, and at Conjola Creek, 29 miles S of Nowra. Also in Queensland.

This species was first described and figured by W. J. Hooker, in Bot. Mag. LXXXVIII (1857) sub t. 4961, under the misapplied name *Seaforthia elegans* R.Br. The error was corrected by Wendland in 1858, his *Ptychosperma cunninghamiana* being based on Hooker's figure and description (excluding the description of the fruit, quoted from Martius' description of the true *Ptychosperma elegans* (R.Br.) H. Wendl.). In Bot. Mag. CXX (1894) sub t. 7345, J. D. Hooker states that t. 4961 was a figure of *P. alexandrae* (= *Archontophoenix alexandrae* (F. Muell.) H. Wendl. et Drude). This is incorrect. The spelling " *cunninghamii* " used by Bentham and others is an error. In horticultural usage the names *Seaforthia elegans* and *Ptychosperma elegans* have been widely used for *A. cunninghamiana*, although *P. elegans* is in fact an entirely different palm. *Jessenia amazonum* Drude was based on a plant cultivated in Rio de Janeiro, mistakenly thought to be a native of tropical Brazil; the excellent plate leaves no question of its identity. *Loroma amethystina* O. F. Cook was based on plants grown in California; these clearly belong to the present species.

The timber is not used for any other than temporary purposes. The leaf-bases have been used by the Aborigines to form carrying utensils for domestic purposes. *A. cunninghamiana* is planted for ornamental purposes here and in many other parts of the world. Seedlings of *Archontophoenix* can be distinguished from those of *Livistona* by the presence of a deep, broad, V-shaped notch in the apex of the leaf (which is larger than those of *Calamus* and *Linospadix* seedlings).

4. LINOSPADIX H. Wendl.

Dwarf unarmed monoecious palms. Stems cane-like, marked with annular leaf-scars. Leaves pinnately divided, in a terminal crown. Inflorescence arising from amongst the leaves. Spadix unbranched and spike-like. Spathes 2 or 3, inserted separately; one short and coriaceous, enclosing the base of the peduncle; another long, linear, membranous, enclosing the spike, but later splitting lengthwise; a third more or less rudimentary spathe is often present, very variable in size, inserted near the base of the spike. Flowers numerous, sessile, typically in threes, the middle one female and maturing much later than the males. Bracts rudimentary. Male flowers: sepals 3, imbricate; petals 3, valvate, rigid, much longer than the sepals; stamens 8-12, on very short filaments which are never geniculate; anthers erect, attached at or slightly above the base. Female flowers: sepals and petals closely imbricate; ovary elliptical, the stigmas 3, small. Fruit small, oblong-ellipsoid, succulent; fibres of the mesocarp undivided, parallel, extending the length of the fruit in a single layer.

About 10 species in New Guinea and Queensland, one of which extends into New South Wales. The name *Linospadix* was wrongly applied by Beccari to a related but distinct New Guinea genus, now *Paralinospadix* Burret. As Burret, in Notizbl. Bot. Gart. Berlin XII (1935) 332-333, has pointed out, the name *Linospadix* H. Wendl. is correctly applied to the present genus. It has clear priority over *Bacularia* F. Muell. which was not validly published until 1878.

L. monostachyus (*Mart.*) *H. Wendl.* in Linnaea XXXIX (1875) 199 (as "*monostachyos*"); Maiden & Betche, Census (1916) 35; Burret in Notizbl. Bot. Gart. Berlin XII (1935) 330. Small erect palm. Stem single, with some persistent leaf-bases under the crown, otherwise smooth, green or grey, 2-5 m. high, 2-5 cm. diam. Leaves few, 50-130 cm. long, including the petiole, which has a broad coriaceous sheathing base, produced into 2 stipule-like lobes; lamina ovate to oblong in outline, the segments 10-30, the longest 15-30 cm. long, variable in width, irregularly alternate to opposite, tapering to the base or adnate to the rhachis, the lower tapering to an acute apex, the upper irregularly and often obliquely truncate and coarsely toothed; principal veins from 1 to 5. Spadices numerous, slightly longer than the leaves, undivided, slender, arched and nodding; peduncle 30-40 cm. long. The lowest spathe 20-30 cm. long, 0·5-1·0 cm. broad. Spike ca. 50 cm. long, enclosed in the uppermost membranous spathe, which splits open along one side. Male flowers 6-8 mm. long; sepals unequal, broadly ovate-cordate, acute, keeled, 2-3 mm. long; petals rigid, lanceolate, acute, slightly convex, striate within; stamens 8-12; anthers erect, subulate. Female flowers: sepals as in the males; petals similar but larger, green, tough and persistent; ovary 1-locular, with 1 erect ovule. Fruit red, ca. 12 mm. long, 5 mm. diam. when dry. Fl. most of the year. " Walking-stick Palm ". *Areca monostachya* Mart., Hist. Nat. Palm. III (1836-39) 178, t. 155, f. 4; *Kentia monostachya* (Mart.) F. Muell., Fragm. VII (1870) 82, 103; Benth., Fl. Aust. VII (1878) 136; *Bacularia monostachya* (Mart.) F. Muell., Fragm. XI (1878) 58; Moore & Betche, Handb. Fl. N.S.W. (1893) 426; F. M. Bail., Qld. Flora V (1902) 1679; Domin in Bibl. Bot. XX, Heft 85^{I} (1915) 499.

North Coast and ranges, up to 3,000 feet, in rainforest, often abundant. Mt. Lindsay, Macpherson Range, Constable 5.1949 (47063), 5.1956 (24154); Tooloom Range, Vickery 4.1953 (47065); Lismore to Nimbin, Cheel 7.1925 (47059); Dorrigo district, Heron 3.1910 (47056); Raleigh, Swain 3.1910 (47057); Mt. Boss State Forest, NW of Wauchope, Constable 10.1956 (41176); Doyle's R. road, Ford 10.1951 (17243); Wauchope, Oxenford 8.1949 (47064); Comboyne, Chisholm 1.1922 (47062); Ellenborough Falls, Maiden & Boorman 10.1902 (47058); John's River, Boorman 6.1915 (47061). Also in Queensland.

47056 is an unusually small form of which more material, especially in the flowering stage, is desirable; the spike is 15 cm. long, the peduncle 15 cm. long, and the leaf lamina 30 cm. long.

The stems are used for walking-sticks and umbrella handles.

◆

22. ARACEAE

(By O. D. Evans)

Flowers very small, unisexual or, in a few genera, hermaphrodite, usually massed on a cylindrical spadix which is more or less surrounded from its base by a coloured or green spathe. Occasionally the spathe is minute or absent. Perianth present only in hermaphrodite flowers and consisting of small scale-like tepals opposite the stamens. Hermaphrodite flowers: stamens 6 or fewer around each ovary, hypogynous, sessile or on a thick filament. Unisexual flowers: males and females borne on different parts of the spadix, the females near the base and the males above, sometimes with a zone of neuter organs between. Anthers in each case 2-celled, opening by pores or slits. Ovary superior or immersed in the spadix, 1- to many-locular; ovules 1 to many; placentation basal, axile, parietal or apical. Fruit a berry. Seeds mostly with copious endosperm, but occasionally without any and in that case the embryo is thick. Mostly perennial herbs of various types but sometimes shrubs or climbers. Leaves usually few, mostly radical, when cauline then alternate, entire or variously divided; venation parallel or reticulate.

About 100 genera and 1,900 species, chiefly in tropical regions. Only 8 genera (one endemic) and about 13 species occur in Australia; 4 genera are native in New South Wales, 3 of them represented each by a single species.

An acrid principle pervades the family in general, and exists in so high a degree in some that they are very poisonous. Some species are cultivated in tropical regions for their rhizomes, which contain much starch; when cooked these lose their poisonous properties and become a useful article of food.

As well as members of genera dealt with below, a number of species are cultivated here. *Monstera deliciosa* Liebm. is grown for its fruit and also for ornamental purposes both in the garden and indoors. Amongst plants grown for indoor purposes are the following; *Aglaonema*, *Anthurium*, *Dieffenbachia* (" Dumb Cane "), *Philodendron* and *Scindapsus*.

1. Perianth present; flowers bisexual, occupying the whole of the spadix.
  2. Perianth of 4 tepals; ovary 1-locular. Leaves radical, grass-like ...... *Gymnostachys* 1.
  2.* Perianth of 6 tepals; ovary 3-locular. Leaves distichous; lamina, in Australian species, articulate on a phyllodineous petiole .... *Pothos* 2.
1.* Perianth absent; flowers unisexual, the females at the base of the spadix and the males above.
  3. Male flowers immediately above the females, without an intermediate zone of neuter organs. Spathe white. Smaller veins between the secondary veins of the leaf parallel .... *Zantedeschia* 3.
  3.* Male flowers separated from the females by a zone of neuter organs and sometimes also by a bare interval. Smaller veins of the leaf more or less reticulate.
    4. Neuter organs short, covering the spadix between the male and female zones without any bare interval. Many of the smaller veins between the secondary veins of the leaf confluent and curved towards the margin.
      5. Ovules numerous in the ovary, parietal. Spathe yellow. Leaf-lamina peltate .... *Colocasia* 4.
      5.* Ovules few in the ovary, basal, erect. Spathe green. Lamina not peltate except when immature .... *Alocasia* 5.
    4.* Neuter organs subulate or filiform, often with a bare interval between them and the male and female flowers respectively. Smaller veins of the leaf all reticulate.
      6. Neuter organs in 2 zones, above and below the male flowers. Ovules 6 or more in the ovary, parietal. Spathe pale green .... *Arum* 6.
      6.* Neuter organs in 1 zone only, immediately above the female flowers. Ovules 1-2, basal. Spathe dark purple inside .... *Typhonium* 7.

1. GYMNOSTACHYS R. Br.

Erect perennial fibrous herbs, with tuberous roots. Leaves radical, linear, elongated. Spathes minute or absent. Spadices slender, pedunculate, in short bracteate racemose clusters, in the axils of leafy bracts along the upper part of a tall, otherwise leafless scape. Flowers hermaphrodite, sessile, loosely packed in the spadix. Tepals 4. Stamens 4; filaments short; anthers 2-celled, the cells extrorsely dehiscent. Ovary 1-locular, with 1 ovule suspended from the apex; stigma sessile. Berry ovoid, globular or subpyriform. Seed with copious endosperm; embryo axile.

A genus of a single species, endemic in Australia.

G. anceps *R.Br.*, Prodr. (1810) 337; Schott, Prodr. Aroid. (1860) 577; F. Muell., Fragm. VIII (1874) 187; Benth., Fl. Austr. VII (1878) 157; Engl. in A. & C. DC. Monogr. Phanerog. II (1879) 219; Engl. in Pflanzenr. IV, 23B (1905) 315; J. H. Maid., Usef. Pl. Austr. (1889) 623; Moore & Betche, Handb. Fl. N.S.W. (1893) 429; F. M. Bail., Qld. Fl. V (1902) 1699; Domin in Bibl. Bot. XX, Heft 85^{1} (1915) 502; Maid. & Betche, Census (1915) 36. Leaves erect, 1-2 m. long, 0·7-2·5 cm. wide, with several primary nerves, the smaller nerves parallel. Scape about as tall as the leaves, flattened or more or less quadrangular, rigid, ca. 5 mm. wide. Clusters of spadices 2-6, distant from each other in the upper part of the scape; spadices variable in length, the longest 10-15 cm. long, 2-6 together, but occasionally more in older clusters; peduncles 1-2 cm. long with 1-2 sheathing scales at the base of each; leafy bract subtending the cluster erect, rigid, shorter than the spadices. Tepals obovate, truncate, not exceeding the ovary. Berry ca. 8 mm. long. "Settler's Flax." *G. gigantea* Domin in Bibl. Bot. Heft. 85^{1} (1915) 502.

North, Central and northern part of South Coast, extending occasionally to the Tablelands, in rainforest and sometimes in wet sclerophyll forest. Tweed R., Jolly ca. 1923 (7380); Mt. Mulligan, near Ramornie, Blakely & Shiress 7.1922 (7381); Gibraltar Range State Forest, E of Glen Innes, Constable 4.1956 (37224); Dorrigo, Boorman, 3.1909 (7383); Dorrigo, Heron 4.1910 (7382); Tinonee, de Beuzeville 8.1916 (7384); Upper Williams R., Fraser & Vickery 1.1934 (7386); Upper Williams R., Fraser & Vickery 11.1936 (7385); Upper Allyn R., Fraser 8.1928 (7387); Myall R. State Forest, Commonwealth Forestry Bureau 9.1941 (7390); Myall R. State Forest, Constable 10.1956 (42037); Tahlee, Port Stephens, Constable 10.1956 (45277); Stroud, Betche 1.1882 (7388); Crawford R., Cheel 10.1902 (7389); Paterson R., Boorman 8.1906 (7391); Wallsend, Boorman 9.1904 (7392); Sawpit Creek, Mandalong, Constable 9.1954 (30942); Ourimbah to Berkely Vale, Salasoo 10.1953 (27030); Somersby, Chippendale 8.1953 (24842); Narara, Fletcher 11.1892 (18904); Narara, Fletcher 1.1893 (7393); Newport, Constable 9.1952 (20504); Newport, Forster 4.1919 (7396); Old Man Creek, Hornsby, Blakely 5.1917 (7395); Mt. Wilson, Constable 12.1948 (16241); Kurrajong Heights, Maiden 4.1901 (7394); Waterfall, Camfield 1.1897 (7397); Stanwell Park, Hamilton 3.1906 (7398); Clifton, Fletcher 9.1893 (7399); Bulli Pass road, Mair & Constable 11.1950 (16232); Brown Mtn., Cambewarra Ra., Rodway 5.1921 (52335); 12 miles from Nowra on Braidwood road, Rodway No. 9152, 2.1925 (52337); Comerong Island, Shoalhaven R., Rodway No. 9153, 9.1932 (52336); 7 miles WNW of Milton, Johnson & Constable 9.1960 (52328). Also in Queensland.

2. POTHOS L.

Tall climbers, with many branches spreading laterally. Climbing by means of adventitious roots. Leaves usually distichous, with the lamina articulate on the petiole, which is often phyllodineous. Inflorescence terminal or, if axillary, the peduncle enclosed at the base in 2 or more sheathing bracts. Spathe ovate or lanceolate, concave or flat, at length reflexed or deciduous. Spadix cylindrical or globose. Flowers hermaphrodite, covering the whole spadix. Tepals 6, scale-like, concave. Stamens 6 or fewer; anther-cells opening extrorsely. Ovary ovoid or obovoid, 3-locular, with 1 erect ovule in each loculus; stigma sessile. Berry often 1-seeded by abortion. Seed without endosperm; embryo large.

A genus of about 60 species which extends over tropical and subtropical Asia and to Madagascar and Australia. Only 2 species, both endemic, occur in Australia, one of them extending into New South Wales.

P. longipes *Schott*, Synops. Aroid. I (1856) 23, t. 47; Schott, Prodr. Syst. Aroid. (1860) 568; F. Muell., Fragm. VIII (1874) 187; Engl. in A. & C. DC. Monogr. Phanerog. (1879) 87; Engl. in Pflanzenr. IV, 23B (1905) 36; Domin in Bibl. Bot. XX, Heft 85^1 (1915) 502; Maiden & Betche, Census (1916) 36. Glabrous climber, covering trunks of trees up to 30 m. or more. Leaves variable, the phyllodineous petiole usually many times longer than broad, linear-cuneate to oblanceolate, rounded, cordate or truncate at the upper end, up to 15 cm. long and 0·4-2·5 cm. wide, the lamina narrow or broad-lanceolate to ovate-acuminate, usually much shorter than the petiole or sometimes absent. In New South Wales specimens the width of either the lamina or the petiole rarely exceeds 1 cm. Inflorescence borne on a peduncle 1-5 cm. long; spathe lanceolate, usually reflexed and shorter than the spadix; spadix cylindrical, 3-6 cm. long when in flower, on a stipe 1-2 cm. long. Berry red, ovoid or oblong, ca. 1 cm. long. *P. australasicus* F. Muell., Fragm. I (1858) 62.

North Coast, in rainforest. Murwillumbah, Forsyth 10.1898 (7354); Murwillumbah, Campbell 3.1910 (7355); Tumbulgum, Bäuerlen 4.1898 (7359); Eureka, Richmond R., Rupp 8.1915 (7366, 7369); Lismore, Cheel 7.1925 (7353); Alstonville district, Tomlins before 1917 (7363); Casino, McAuliffe 1.1911 (7358); Richmond R., Fawcett ca. 1876 (7364); Richmond R., Woolls before 1893 (7371); Clarence R. before 1916 (7361); Coff's Harbour to Grafton, Maiden & Boorman 11.1903 (7365); Woolgoolga, de Beuzeville 10.1933 (7370); Dorrigo, Boorman 5.1909 (7351); Dorrigo, Boorman 12.1909 (7352); Dorrigo, Heron 4.1910 (7350); Dorrigo, Tindale 4.1944 (7367); Dorrigo, Fraser & Vickery 4.1953 (27027); Dorrigo National Park, Earp 3.1954 (27028); Bellingen, Blaxell 8.1959 (47535); Urunga, Swain 4.1910 (7360); Hastings R., Fraser before 1833 (7357); Port Macquarie, Boorman 2.1898 (7356); Comboyne, Fraser 6.1935 (7368); Kendall, Bailey 9.1929 (7362). Also in Queensland.

This species was referred to as *P. loureirii* Hook. et Arn. (1841) by Benth., Fl. Austr. VII (1878) 158, and F. M. Bail., Qld. Fl. V (1902) 1698, but *P. loureirii* is a species of S.E. Asia which does not occur in Australia. *P. cylindrica* Presl, given as a supposed synonym by Benth., l.c., is a native of the Philippine Is. *P. appendiculatus* Backh. and *P. arthrophylla* A. Cunn., cited by Engl., Pflanzenr. IV, 23B (1905) 36, are mere manuscript names of no validity.

3. *ZANTEDESCHIA Spreng.

Perennial monoecious herbs with thick rhizomes. Leaves all radical; petiole long and spongy with a sheathing base; lamina hastate to cordate-ovate or lanceolate. Peduncles as long as, or longer than, the leaves and appearing with them. Spathe white or yellow, clasping the spadix at the base. Spadix bearing female flowers at the base and male flowers on the whole of the upper portion. Perianth absent. Male flowers: stamens 2-3; anthers sessile. Female flowers: ovary short, ovoid, 1- to 5-locular, with axile placentation and usually 4 ovules in each loculus; staminodes sometimes present. Fruit a berry.

A genus of about 8 species in S. Africa; several are cultivated in gardens, one naturalised in New South Wales.

***Z. aethiopica** (*L.*) *Spreng.*, Syst. Veg. III (1826) 765; Engl., Pflanzenr. IV, 23Dc. (1915) 62; Hurst, Pois. Pl. N.S.W. (1942) 52. Erect glabrous robust herb. Leaves dark green, cordate-sagittate or sagittate, 15-45 cm. long, 10-25 cm. broad, with obtuse lobes at the base; small lateral veins parallel with the larger ones; petioles 50-150 cm. long. Peduncles about as long as the petioles. Spathe 10-25 cm. long, recurved towards the apex, white shading to green on the outer surface near the base. Spadix orange-yellow, much shorter than the spathe; female zone about one quarter as long as the male; staminodes present amongst the female flowers. Berry shortly ovoid, about 1 cm. diam., yellowish. Chromosome No. 2n = 32, Darlington & Wylie, Chrom. Atlas Fl. Pl. (1955) 376. "Arum Lily." *Calla aethiopica* L., Sp. Pl. (1753) 968; *Richardia africana* Kunth in Mém. Mus. Hist. Nat. Paris IV (1815) 433, t. 20.

Coast. Occasionally naturalised in wet ground. Cheltenham, Johnson 6.1957 (42029); Warumbul, National Park, Johnson 3.1953 (24896). Cultivated in gardens for ornamental purposes. Native of South Africa.

4. *COLOCASIA Schott

Perennial monoecious herbs, with tuberous rhizomes or short, thick, erect stems. Leaves radical, on long petioles with sheathing bases; lamina undivided, peltate, ovate to sagittate-cordate. Primary lateral veins strong and few, the fine veins between them reticulate, but some confluent and curving towards the margins of the leaf. Spathe convolute and persistent at the base, constricted above; lamina lanceolate. Spadix cylindrical, bearing male flowers above the females and separated from them by a zone of short neuter organs, the whole spadix often terminating in a cone-shaped sterile appendage. Perianth absent. Male flowers: stamens 3-8, connate. Female flowers: ovary ovoid to oblong, 1-locular; ovules numerous, horizontal. Fruit a berry, obconic or short cylindrical; many-seeded. Seeds oblong, with copious endosperm.

A genus of about 7 species, found in tropical Asia, one species now widely distributed in the tropics and naturalised in New South Wales.

***C. esculenta** (*L.*) *Schott* in Schott & Endl., Meletem. Bot. I (1832) 18; F. T. Hubbard & Rehder in Bot. Mus. Leafl. Harv. Univ. I, 1 (1932) 5; A. L. Hill, l.c. VII, 7 (1939) 115. A large erect glabrous herb with a short tuberous stem. Leaves ovate, cordate, peltate, often 30-40 cm. long and 20-30 cm. wide; petioles 50-100 cm. long. Persistent base of the spathe ovoid-oblong, ca. 3-5 cm. long; lamina pale yellow 12-18 cm. long. Spadix much shorter than the spathe. Berry 3-5 mm. diam., ellipsoid. Seeds often numerous, 12-15 mm. long, ovoid. Chromosome No. $2n = 28, 36, 42, 48$ (in various forms), Darlington & Wylie, Chrom. Atlas Fl. Pl. (1955) 374. "Taro." *Arum esculentum* L., Sp. Pl. II (1753) 965; *A. colocasia* L., l.c. 965; *Caladium acre* R.Br., Prodr. (1810) 336 (as "*Calladium*"); *Colocasia antiquorum* Schott, Meletem. I (1832) 18; F. Muell., Fragm. VIII (1874) 187; Benth., Fl. Austr. VII (1878) 155; J. H. Maid., Usef. Pl. Austr. (1889) 17; Bot. Mag. CXX (1894) t. 7364; F. M. Bail., Qld. Fl. (1902) 1696; Ewart & Davies, Fl. North. Terr. (1917) 65; Engl., Pflanzenr. IV, 23E (1920) 65.

Coast. Occasionally naturalised in wet ground. Wyong Creek, Hyem 12.1950 (18920). Also naturalised in Queensland and cultivated extensively in all tropical countries.

C. esculenta has been widely grown since ancient times; its country of origin is not known with certainty. It is an extremely variable species which has been divided into numerous cultivated forms, some of which have been given varietal rank. The material available is not sufficient to make it possible to decide to which of these varieties our naturalised plant belongs. Many of the various cultivars are described by Whitney, Bowers and Takahashi in Hawaii Agr. Exper. Stn. Bull. No. 84 (1939). Some are grown in New South Wales for ornament.

5. ALOCASIA (Schott) G.Don.

Perennial monoecious herbs with thick stems which are either subterranean or aerial. Leaves large, on stout but spongy petioles with sheathing bases; lamina undivided, peltate when young, usually hastate-cordate when mature. Primary lateral veins strong and few, the fine veins between them reticulate, some confluent and curving towards the margins. Spathe convolute and persistent at the base, constricted above; the lamina lanceolate or cymbiform. Spadix shorter than the spathe, cylindrical, bearing male flowers above the females and separated from them by a zone of short neuter organs, the whole spadix terminating in a cone-shaped sterile appendage. Perianth absent. Male flowers: stamens 3-8, connate. Female flowers: ovary ovoid to oblong, 1-locular or occasionally 3- to 4-locular at the apex; ovules few, erect. Fruit a berry.

The name *Alocasia* (Schott) G.Don is at present illegitimate, being a later homonym of *Alocasia* Raf., but is used here in expectation of its being conserved later.

A genus of 50-60 species principally in tropical Asia, but extending to the Pacific Islands and represented in Australia by a single species.

A. macrorrhizos (*L.*) *G. Don* in Sweet, Hort. Brit. ed. 3 (1839) 631; Schott in Österr. Bot. Wochenbl. IV (1854) 409; Schott, Prodr. Syst. Aroid. (1860) 146; Engl. in A. & C. DC., Monogr. Phanerog. II (1879) 502; F. M. Bail., Qld. Fl. V (1902) 1697, excl. var.; F. M. Bail., Weeds and Pois. Pl. Qld. (1906) 205; Engl., Pflanzenr. IV, 23E (1920) 84; Hurst, Pois. Pl. N.S.W. (1942) 50. An erect glabrous acrid herb with a tuberous rhizome which may grow up into an erect stem 1 m. high and more than 6 cm. diam. Leaves few, forming a crown at the apex of the stem; lamina broadly hastate-cordate, up to 100 cm. long and 50 cm. broad; primary lateral veins 8-12 pairs; petiole thick and spongy, up to ca. 100 cm. long. Peduncle of the inflorescence about as long as the petioles. Inflorescence strongly and sweetly scented. Lamina of the spathe green, glaucous on the inner surface. Berry bright red, ovoid, 8-14 mm. long, containing 3 or 4 seeds. Chromosome No. 2n = 26, 28, Darlington & Wylie, Chrom. Atlas Fl. Pl. (1955) 375. " Cunjevoi ", " Spoon Lily ". *Arum macrorrhizon* L., Sp. Pl. (1753) 965; *Caladium macrorrhizon* (L.) R.Br., Prodr. (1810) 336 (as " *Calladium* "); *Colocasia macrorrhizos* (L.) Schott in Schott & Endl., Meletem. I (1832) 18; Benth., Fl. Austr. VII (1875) 155; Moore & Betche, Handb. Fl. N.S.W. (1893) 428; Domin in Bibl. Bot. XX, Heft 85^{I} (1915) 503; Maid. & Betche, Census (1916) 36.

North and perhaps Central Coast, in or near rainforest. Acacia Creek near Legume, Dunn 3.1906 (18912); Tooloom Range, Maiden 12.1907 (18918); Rivertree, Upper Clarence R., Cambage 9.1911 (2872); Byron Bay, Maiden & Boorman 12.1903 (18909); Brickmaker's Creek, 4 miles E of Ramornie, Blakely & Shiress 7.1922 (18913); Eastern Dorrigo, Hayes 1.1960 (49062); George's Creek, Upper Macleay R., Boorman 1.1907 (18917); Yessabah Caves, NW of Kempsey, Ingram 1.1960 (49063); Manning R., ca. 1880 (18910); Gloucester, Betche 1,1882 (18914); Kiama to Jamberoo, possibly introduced, Johnson 4.1953 (23705). Also in Queensland and the Pacific Islands. Cultivated in gardens for ornamental purposes. Cultivated also in Malaysia and southern Asia, and originally described from Ceylon.

6. *ARUM L.

Perennial monoecious herbs, with small rounded or depressed tubers. Leaves simple; lamina hastate to sagittate; venation reticulate; petiole with a sheathing base. Spathe convolute and ovoid to shortly cylindrical at the base, constricted above; lamina ovate- or oblong-lanceolate, withering but persistent. Spadix cylindrical, surmounted by a thick, sub-cylindrical appendage which bears no flowers. Flowers unisexual, the females at the base of the spadix with a zone of sub-erect, subulate neuter organs directly above them, the male flowers above these, followed by a zone of deflexed neuter organs. Bare intervals often occur between the female, male and neuter zones of the spadix. Perianth absent. Male flowers: anthers sessile. Female flowers: ovary 1-locular, ovules 6 or more on parietal placentas; stigma sessile. Berry ovoid, many-seeded. Seeds with copious endosperm; embryo axile.

A genus of about 20 species, found mainly in the Mediterranean region; several are cultivated in gardens in New South Wales, one naturalised.

***A. italicum** *Mill.*, Gard. Dict. ed. 8 (1768) n.2.; Engl., Pflanzenr. IV, 23F (1920) 82. Erect herb 30-50 cm. high. Leaves triangular-hastate, ca. 12-20 cm. long and 12-20 cm. broad, veined with white, the basal lobes spreading almost at right angles; petiole 20-30 cm. long. Peduncle of the inflorescence shorter than the petioles. Spathe whitish-green, sparsely flecked with purple, 20-30 cm. long. Spadix yellow, usually less than half as long as the spathe. Chromosome No. $2n = 64$, Darlington & Wylie Chrom. Atlas Fl. Pl. (1955) 376. For synonymy see Engl., l.c.

Central Coast. Occasionally naturalised. Kincumber, Willows 11.1950 (18933).

A polymorphic species, often cultivated in gardens, native of S. Europe and N. Africa.

7. TYPHONIUM Schott

Perennial monoecious herbs, with small tuberous rhizomes. Leaves radical, petiolate; lamina entire, 3- to 5-lobed or pedatisect. Peduncle of the inflorescence short. Spathe convolute and persistent at the base, constricted above; lamina ovate, lanceolate or linear, withering. Spadix bearing female flowers at the base and a zone of filiform or clavate neuter organs immediately above them, the males separated from these by a bare interval, the whole terminating in a fleshy appendage which bears no flowers. Perianth absent. Male flowers: stamens 1-3, subsessile. Female flowers: ovary 1-locular; stigma sessile; ovules 1-2, basal, erect. Berry ovoid, 1- to 2-seeded. Seeds with copious endosperm; embryo axile.

A genus of about 25 species found in eastern and south-eastern Asia, the Pacific Islands and Australia. The Australian species number about 6 of which two occur in New South Wales; all are apparently endemic, but the genus as a whole needs revision. For further treatment of some of the Australian species see Evans in Contrib. N.S.W. Nat. Herb. III, 2 (1961) 85-87.

1. Sterile terminal appendage of the spadix more or less conical in shape, obliquely truncate at the base, 2-5 cm. long .... *T. brownii* 1.
1.* Terminal appendage terete, not dilated or truncate at the base, 5-15 cm. long .... *T. eliosurum* 2.

1. T. brownii *Schott*, Aroid. I (1855) 11, t. 15,; Schott, Prodr. Syst. Aroid. (1860) 107; F. Muell., Fragm. Phytogr. Austral. VIII (1874) 187; Bot. Mag. CI (1875) t. 6180; Benth., Fl. Austr. VII (1878) 155; Engl. in A. & C. DC., Monogr. Phanerog. II (1879) 613; J. H. Maiden, Usef. Pl. Austr. (1889) 66; Moore & Betche, Handb. Fl. N.S.W. (1893) 428; Domin in Bibl. Bot. XX, Heft 85^{1} (1915) 504; F. M. Bail., Qld. Fl. V (1902) 1694; Maiden & Betche, Census (1916) 36; Engler in Pflanzenr. IV, 23F (1920) 116; Evans in Contrib. N.S.W. Nat. Herb. III, 2 (1961) 85. Erect glabrous herb, 25-50 cm. high. Leaves hastate, 3-lobed to 3-partite. Lobes narrow- to broad-lanceolate, 5-20 cm. long and 0·5-10 cm. broad, the small veins between the primary lateral veins reticulate; petioles slender, 10-70 cm. long. Inflorescences axillary in origin, sometimes several produced in the season from the one rhizome. Peduncles 5-15 cm. long. Spathe ovoid at the base; lamina broadly ovate, acuminate, 5-15 cm. long, deep purple inside and greenish outside. Spadix: female zone at the base 1-2 cm. long; neuter organs filiform, decurved, dark purplish; terminal appendage more or less conical, 2-5 cm. long, 4-15 mm. maximum diameter, obliquely truncate at the base, almost black in colour and finally putrescent. Flowering September to March.

North and Central Coast, extending to the coastal ranges and eastern valleys of the Tablelands; in or near rainforest, frequently on banks of streams. Murwillumbah, Campbell 12.1912 (18939); Tweed R. district, Harrison 2.1902 (18955); Bonalbo Estate, Fleuston 3.1918 (18948); Tunstall via Lismore, Tanner 4.1911 (18944); Lismore, Rothwell 12.1906 (18946); Lismore, Bäuerlen 4.1891 (18945); Alstonville district, Tomlins before 1917 (18942); Sandilands Range, W of Casino, Steetz 2.1918 (18949); Deepdene, Hillgrove, Teacher of Public School 2.1912 (18940); Bowraville, Churchill 3.1954 (26694); Eastern Dorrigo, Floyd 1.1960 (49061); Nambucca R., Mathieson 2.1909 (18952); George's Creek, 40-45 miles NW of Kempsey, Boorman 1.1907 (18954); Walcha district, Campbell 12.1898 (18956); Hastings R., before 1890 (18957); Warne's Creek, E of Yarrowitch, Borger 2.1960 (49068); Wilson R., Borger 2.1960 (49070); Port Macquarie, Boorman 3.1898 (18916); The Comboyne, Chisholm 12.1924 (18959); Ellenborough Falls, Borger 2.1960 (49069); Coneac district, ca. 15 miles NW of Gloucester, Vickery 2.1937 (18938); Glendon, Hunter R., Leichhardt 1843 (18936); Capertee Valley, Gallagher 3.1913 (18937); Capertee Valley, Barnes 1.1912 (18953). Also in Queensland and possibly the Northern Territory and the north of Western Australia.

A chromosome count of $2n = $ ca. 160 has been made on this species (B. G. Briggs, unpublished).

2. T. eliosurum (*F. Muell. ex Benth.*) *O. D. Evans* in Contrib. N.S.W. Nat. Herb. III, 2 (1961) 86. Erect glabrous herb, 20-40 cm. high. Leaves hastate, 3-lobed to 3-partite; lobes linear to broad-lanceolate, 5-20 cm. long; petioles slender, 10-40 cm. long. Peduncles 5-15 cm. long. Spathe ovoid at the base; lamina lanceolate to narrow-lanceolate, the apex acuminate and often attenuated, 10-20 cm. long, usually deep purplish inside and greenish outside. Spadix: female zone at the base ca. 1 cm. long; neuter zone 2-3 cm. long; neuter organs filiform, 2-10 mm. long; male zone 1-2 cm. long; terminal appendage terete, 7-12 cm. long, when dry then 2-4 mm. diam., dark in colour, the base not much thicker than the upper portion of the spadix. Flowering season October to December. *T. brownii* Schott var. *eliosurum* F. Muell. ex Benth., Fl. Austral. VII (1878) 154.

Southern parts of the North Coast, Central and South Coast as far as Jervis Bay district; in or near rainforest or on banks of streams. Bulladelah, Rupp 11.1923 (18958); Crawford R., Cheel 10.1902 (18950); Wyong Creek, Betche 10.1893 (18943); Patonga Creek, Blakely & Shiress 12.1924 (18941); near Manly Beach, Wilhelmi 11.1863 (MEL); Stanwell Park, Hamilton 10.1910 (18951); Mt. Coolangatta, 5 miles NE of Nowra, Constable 12.1960 (54003); Currumbene Creek, 6½ miles S of Nowra, Constable 12.1960 (54002). The following specimens in leaf only, probably belong to this species: Mt. Coolangatta, Rodway 10.1946 (54099): Lower Budgong, 12 miles W of Nowra, Rodway 3.1945 (54100); Mathie's Creek, 6 miles W of Wandandian, Floyd 8.1952 (20286).

There do not appear to be any consistent differences in vegetative characters between *T. eliosurum* and *T. brownii.* Further collections of good flowering material are desirable.

The species includes various polyploid levels and approximate chromosome counts of $2n = 118$ 130, 152 and 168 have been obtained (B. G. Briggs, unpublished). Most of the values obtained are close to multiples of 13, which is the base number indicated for *Typhonium* by Darlington and Wylie, Chrom. Atlas Fl. Pl. (1955) 374.

93 Crassulaceae
94 Escalloniaceae
95 Pittosporaceae
96 Cunoniaceae
97 Davidsoniaceae
98 Rosaceae
99 Mimosaceae
100 Caesalpiniaceae
101 *Papilionaceae, Part I*
102 Geraniaceae
103 Oxalidaceae
104 Linaceae
105 Erythroxylaceae
106 Zygophyllaceae
107 Rutaceae
108 Simaroubaceae
109 Burseraceae
110 Meliaceae
111 Tremandraceae
112 Polygalaceae
113 Euphorbiaceae
114 Callitrichaceae
115 Anacardiaceae
116 Aquifoliaceae
117 Celastraceae
118 Siphonodontaceae
119 Hippocrateaceae
120 Stackhousiaceae
121 Icacinaceae
122 Sapindaceae
123 Akaniaceae
124 Rhamnaceae
125 Vitaceae
126 Elaeocarpaceae
127 Tiliaceae
128 Malvaceae
129 Sterculiaceae
130 Dilleniaceae
131 Eucryphiaceae
132 Hypericaceae
133 Elatinaceae
134 Frankeniaceae
135 Violaceae
136 Flacourtiaceae
137 Passifloraceae
138 Cactaceae
139 Thymelaeaceae
140 Lythraceae
141 Rhizophoraceae
142 Myrtaceae
143 Melastomataceae
144 Onagraceae
145 Haloragiaceae
146 Araliaceae
147 Umbelliferae
148 Alangiaceae
149 Ericaceae
150 Epacridaceae
151 Myrsinaceae
152 Primulaceae
153 Plumbaginaceae
154 Sapotaceae
155 Ebenaceae
156 Symplocaceae
157 Oleaceae
158 Loganiaceae
159 Gentianaceae
160 Menyanthaceae
161 Apocynaceae
162 Asclepiadaceae
163 Convolvulaceae
164 Polemoniaceae
165 Hydrophyllaceae
166 Boraginaceae
167 Verbenaceae
168 Avicenniaceae
169 Labiatae
170 Solanaceae
171 Scrophulariaceae
172 Selaginaceae
173 Bignoniaceae
174 Pedaliaceae
175 Martyniaceae
176 Orobanchaceae
177 Gesneriaceae
178 Lentibulariaceae
179 Acanthaceae
180 Myoporaceae
181 Plantaginaceae
182 Rubiaceae
183 Caprifoliaceae
184 Dipsacaceae
185 Cucurbitaceae
186 Campanulaceae
187 Lobeliaceae
188 Goodeniaceae
189 Brunoniaceae
190 Stylidiaceae
191 Compositae

PTERIDOPHYTA

192 Lycopodiaceae
193 Selaginellaceae
194 Isoetaceae
195 Psilotaceae
196 Ophioglossaceae
197 Marattiaceae
198 Osmundaceae
199 Schizaeaceae
200 Gleicheniaceae
201 Hymenophyllaceae
202 Cyatheaceae
203 Dicksoniaceae
204 Lindsaeaceae
205 Pteridaceae
206 Adiantaceae
207 Vittariaceae
208 *Davalliaceae*
209 *Grammitidaceae*
210 *Polypodiaceae*
211 *Aspidiaceae*
212 Thelypteridaceae
213 Aspleniaceae
214 Blechnaceae
215 Marsileaceae
216 Azollaceae
217 Salviniaceae